

# VUV Beamline Guide

## **Monochromator Legend**

CCM	Channel Cut Monochromator
DCM	Double Crystal Monochromator
DCCM	Double Channel Cut Monochromator
DMM	Double Multilayer Monochromator
ERG	Extended Range Grasshopper
INTERMTR	Interferometer
MLM	Multi-layer Monochromator
NIM	Normal Incidence Monochromator
PGM	Plane Grating Monochromator
SCM	Single Crystal Monochromator
SGM	Spherical Grating Monochromator
TGM	Torroidal Grating Monochromator
TSGM	Torroidal Mirror Spherical Grating Monochromator
WB	White Beam

## **Beamline U1A**

PRT Affiliations: ExxonMobil Research and Engineering Co.

Beamline Status: Operating

Primary Techniques: Soft X-ray Spec., NEXAFS

Detailed Research/Techniques: NEXAFS characterization of catalytic materials and fundamental studies of surface chemistry on model systems.

Energy Range: 20-1500 eV

Monochromator Type: ERG

General user allocation: 25%

Local contact: Michael Sansone, 631-344-5759, msanson@bnl.gov

Spokesperson: Paul Stevens, 908-730-2584, paul.a.stevens@exxonmobil.com

Beamline Phone: 631-344-5501

## **Beamline U2A**

PRT Affiliations: Carnegie Institute of Washington

Beamline Status: Operating

Primary Techniques: IR Spectroscopy

Detailed Research/Techniques: Measurement of far- to near-infrared spectra of a wide variety of materials from ambient to ultrahigh pressures at variable temperatures by coupling synchrotron infrared microspectroscopic techniques, other optical and new diamond-anvil cell, methods.

Energy Range: 800-4000 cm<sup>-1</sup>

Monochromator Type: FTIR

General user allocation: 25%

Local contact: Zhenxian Liu, 631-209-1966, liu@gl.ciw.edu

Spokesperson: Russell Hemley, 202-686-2410, X2465, hemley@gl.ciw.edu

Beamline Phone: 631-344-5502

**Beamline U2B**

PRT Affiliations: Albert Einstein College of Medicine  
Beamline Status: Operating  
Primary Techniques: IR Spec. & Microscopy  
Detailed Research/Techniques: IR microscopy, time-resolved infrared spectroscopy, and far-infrared spectroscopy.  
Energy Range: 50-4000 cm<sup>-1</sup>  
Monochromator Type: FTIR  
General user allocation: 25%  
Local contact: Nebojsa Marinkovic, 631-344-3808, marinkov@bnl.gov  
Spokesperson: Mark Chance, 718-430-4136/2894, mrc@aecom.yu.edu  
Beamline Phone: 631-344-5502

**Beamline U3C**

PRT Affiliations: Bechtel Nevada, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Sandia National Laboratory  
Beamline Status: Operating  
Primary Techniques: Soft X-ray Spectroscopy  
Detailed Research/Techniques: Photoelectron spect., experimental system calibrations, and detector calibrations.  
Energy Range: 50-1000 eV  
Monochromator Type: ERG  
General user allocation: 25%  
Local contact: Michael Sagurton, 631-344-5708, sagurton@bnl.gov  
Spokesperson: Roger Bartlett, 505-667-5923, rbartlett@lanl.gov  
Beamline Phone: 631-344-5503

**Beamline U4A**

PRT Affiliations: Boston University, Brookhaven National Laboratory (NSLS), North Carolina State University, Rutgers University  
Beamline Status: Operating  
Primary Techniques: UV Photoemission Spec.  
Detailed Research/Techniques: Photoemission spectroscopy in the study of electronic structures in solids and on surfaces.  
Energy Range: 10-300 eV  
Monochromator Type: SGM  
General user allocation: 0%  
Local contact: Per-Anders Glans, 617-353-5980, glans@buphy.bu.edu  
Spokesperson: Jack Rowe, 919-549-4332, rowe@aro-emh1.army.mil  
Beamline Phone: 631-344-5504

**Beamline U4B**

PRT Affiliations: Brookhaven National Laboratory (NSLS), Montana State University, Naval Research Laboratory, Pohang Institute of Science & Technology  
Beamline Status: Operating  
Primary Techniques: Soft X-ray Spectroscopy  
Detailed Research/Techniques: Soft x-ray and VUV, photoemission, spectroscopy and photo absorption. Techniques: X-ray absorption spectroscopy, X-ray magnetic circular dichroism, X-ray fluorescence spectroscopy, x-ray resonant magnetic scattering.  
Energy Range: 20-1200 eV  
Monochromator Type: SGM  
General user allocation: 35%  
Local contact: Dario Arena, darena@bnl.gov  
Spokesperson: Yves Idzerda, 406-994-7838, idzerda@physics.montana.edu  
Beamline Phone: 631-344-7290

**Beamline U5**

PRT Affiliations: Brookhaven National Laboratory (NSLS)  
Beamline Status: Diagnostic  
Primary Techniques: Diagnostic  
Detailed Research/Techniques: monitoring of beam parameters during operations and machine studies.  
General user allocation: 0%

Local contact: Stephen Kramer, 631-344-4925, skramer@bnl.gov  
Spokesperson: Stephen Kramer, 631-344-4925, skramer@bnl.gov  
Beamline Phone: 631-344-5505

#### **Beamline U5UA**

PRT Affiliations: Argonne National Laboratory, Brookhaven National Laboratory (NSLS), Brookhaven National Laboratory (Physics), University of Texas  
Beamline Status: Operating  
Primary Techniques: UV Spin-resolved PES  
Detailed Research/Techniques: Valence band photoemission; core level photoemission; angular-resolved photoemission; spin polarized photoemission.  
Energy Range: 15-150 eV  
Monochromator Type: TGM  
General user allocation: 50%  
Local contact: Elio Vescovo, 631-344-7399, vescovo@bnl.gov  
Spokesperson: Elio Vescovo, 631-344-7399, vescovo@bnl.gov  
Beamline Phone: 631-344-5505

#### **Beamline U7A**

PRT Affiliations: Brookhaven National Laboratory (Chemistry), Brookhaven National Laboratory (Physics), Dow Chemical Company, National Institute of Standards & Technology, Rutgers University  
Texas A&M University, University of Michigan,  
Beamline Status: Operating  
Primary Techniques: Soft X-ray PES & NEXAFS  
Detailed Research/Techniques: XPS and XAS on surface and in bulk, under vacuum and atm.  
Energy Range: 180-1200 eV  
Monochromator Type: SGM  
General user allocation: 25%  
Local contact: Zugen Fu, 631-344-3923, zugenfu@bnls3.nsls.bnl.gov  
Spokesperson: Daniel Fischer, 631-344-5177, dfischer@bnl.gov  
Beamline Phone: 631-344-5507

#### **Beamline U7B**

PRT Affiliations: Brookhaven National Laboratory (NSLS)  
Beamline Status: Operating  
Primary Techniques: Soft X-ray Spectroscopy  
Detailed Research/Techniques: VUV/soft x-ray photoemission and SEXAFS/NEXAFS/XANES, Practical SR Training Course with relatively low photon energy resolution.  
Energy Range: 15-300 eV  
Monochromator Type: PGM  
General user allocation: 100%  
Local contact: Qing-Li Dong, 631-344-5358, dong@bnls1.nsls.bnl.gov  
Spokesperson: Steven Hulbert, 631-344-7570, hulbert1@bnl.gov  
Beamline Phone: 631-344-5507

#### **Beamline U8A**

PRT Affiliations: University of California @ Riverside  
Beamline Status: Operating  
Primary Techniques: ARUPS, NEXAFS  
Detailed Research/Techniques: ARUPS, NEXAFS.  
Energy Range: 7-1300 eV  
Monochromator Type: TGM  
General user allocation: 25%  
Local contact: Jory Yarmoff, 909-787-5336/3537, yarmoff@ucr.edu  
Spokesperson: Jory Yarmoff, 909-787-5336/3537, yarmoff@ucr.edu  
Beamline Phone: 631-344-5508

#### **Beamline U8B**

PRT Affiliations: IBM Research Division, University of California @ Riverside, University of Michigan  
Beamline Status: Operating  
Primary Techniques: Soft X-ray Spectroscopy

Detailed Research/Techniques: ARUPS, NEXAFS.  
Energy Range: 100-1000 eV  
Monochromator Type: TGM  
General user allocation: 25%  
Local contact: Thomas Owens, (734)763-3173, towensz@umich.edu  
Spokesperson: Mark Banaszak-Holl, 734-763-2283, mbanasza@bnl.gov  
Beamline Phone: 631-344-5508

#### **Beamline U9A**

PRT Affiliations: Brookhaven National Laboratory (NSLS)  
Beamline Status: Operating  
Primary Techniques: Photo-stimulated Desorp.  
Detailed Research/Techniques: Room temperature PSD of UHV accelerator and storage ring construction materials are measured and specular photons from beam chamber materials are also measured.  
Energy Range: White  
Monochromator Type: W  
General user allocation: 25%  
Local contact: Christopher Lanni, 631-344-4100, lanni@bnl.gov  
Spokesperson: Conrad Foerster, 631-344-4754, foerster@bnl.gov  
Beamline Phone: 631-344-7766

#### **Beamline U9B**

PRT Affiliations: Brookhaven National Laboratory (Biology)  
Beamline Status: Operating  
Primary Techniques: UV CD & Fluorescence  
Detailed Research/Techniques: Studies of the solution structure and dynamics of biological macromolecules such as DNA, RNA, proteins and polysaccharides.  
Energy Range: 2.1-8.9 eV  
Monochromator Type: NIM  
General user allocation: 25%  
Local contact: John Sutherland, 631-344-3279, jcs@bnl.gov  
Spokesperson: John Sutherland, 631-344-3279, jcs@bnl.gov  
Beamline Phone: 631-344-5509

#### **Beamline U10A**

PRT Affiliations: Brookhaven National Laboratory (NSLS), Brookhaven National Laboratory (Physics)  
Beamline Status: Operating  
Primary Techniques: IR Spectroscopy  
Detailed Research/Techniques: Measurement of Optical Properties of solids including highly correlated systems, high brightness IR spectroscopy measurements on small samples. Geared for infrared spectroscopy, utilizing the high brightness, as well as wide spectral range of synch.  
Energy Range: 30-10000 cm<sup>-1</sup>  
Monochromator Type: FTIR  
General user allocation: 25%  
Local contact: Christopher Homes, 631-344-7579, homes@bnl.gov  
Spokesperson: G. Lawrence Carr, 631-344-2237, carr@bnl.gov  
Beamline Phone: 631-344-5510

#### **Beamline U10B**

PRT Affiliations: Brookhaven National Laboratory (NSLS), University of Saskatchewan,  
Beamline Status: Operating  
Primary Techniques: IR Microspectroscopy  
Detailed Research/Techniques: IR microspect, micro-sampling, imaging of vibrational/chemical spectroscopic features.  
Energy Range: 50-4000 cm<sup>-1</sup>  
Monochromator Type: FTIR  
General user allocation: 25%  
Local contact: Lisa Miller, 631-344-2091, lmiller@bnl.gov  
Spokesperson: Lisa Miller, 631-344-2091, lmiller@bnl.gov  
Beamline Phone: 631-344-5510

**Beamline U11**

PRT Affiliations: Brookhaven National Laboratory (Biology), Brookhaven National Laboratory (Environmental Science), Brookhaven National Laboratory (NSLS)  
Beamline Status: Operating  
Primary Techniques: UV Spectroscopy  
Detailed Research/Techniques: 3 research disciplines PIMS (photoionization mass spectrometry), Surface, and Biology. Techniques: UV photoabsorption, photoemission, and (gas phase) photoionization spectroscopies.  
Energy Range: 3-30 eV  
Monochromator Type: NIM  
General user allocation: 25%  
Local contact: John Sutherland, 631-344-3279, jcs@bnl.gov  
Spokesperson: Bruce Klemm, 631-342-4001, klemm@bnl.gov  
Beamline Phone: 631-344-5511

**Beamline U12A**

PRT Affiliations: Brookhaven National Laboratory (NSLS), Oak Ridge National Laboratory  
Beamline Status: Operating  
Primary Techniques: Soft X-ray Spectroscopy  
Detailed Research/Techniques: Primarily the growth and characterization of metal oxide films. These films are grown in situ and then soft x-ray techniques are used to study their composition, oxidation state and structure. Reaction pathways of adsorbates are determined as a function.  
Energy Range: 100-800 eV  
Monochromator Type: SGM  
General user allocation: 50%  
Local contact: Steven Hulbert, 631-344-7570, hulbert1@bnl.gov  
Spokesperson: David Mullins, 865-574-2796, mullinsdr@ornl.gov  
Beamline Phone: 631-344-5512

**Beamline U13UA**

PRT Affiliations: Brookhaven National Laboratory (NSLS)  
Beamline Status: Operating  
Primary Techniques: Focused White Light  
Detailed Research/Techniques: As an undulator, fundamental photon energy ranges from ~3eV(green) to ~50eV and the undulator harmonics up to fifth are usable. As a wiggler, critical energy is 345eV with usable flux throughout the soft x-ray range. Techniques: Focused White light.  
Energy Range: white  
Monochromator Type: W  
General user allocation: 10.625%  
Local contact: Steven Hulbert, 631-344-7570, hulbert1@bnl.gov  
Spokesperson: Steven Hulbert, 631-344-7570, hulbert1@bnl.gov  
Beamline Phone: 631-344-5913

**Beamline U13UB**

PRT Affiliations: Boston University, Brandeis University, Brookhaven National Laboratory (NSLS), Brookhaven National Laboratory (Physics)  
Beamline Status: Operating  
Primary Techniques: VUV Angle-resolved PES  
Detailed Research/Techniques: Focuses on studies of the electronic structure and response of strongly correlated systems. Highlights include a study of the overdoped phase of the cuprate,  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ .  
Energy Range: 5-30 eV  
Monochromator Type: NIM  
General user allocation: 63.75%  
Local contact: Steven Hulbert, 631-344-7570, hulbert1@bnl.gov  
Spokesperson: Peter Johnson, 631-344-3705, pdj@bnl.gov  
Beamline Phone: 631-344-5513

**Beamline U13UC**

PRT Affiliations: Lucent Technologies, Inc.  
Beamline Status: Operating  
Primary Techniques: Lithography  
Detailed Research/Techniques: Interferometry.  
Energy Range: white  
Monochromator Type: W  
General user allocation: 10.625%  
Local contact: William Lehnert, 631-344-3635, lehnert@bnl.gov  
Spokesperson: Obert Wood, 908-582-4457, orw@agere.com  
Beamline Phone: 631-344-5513

**Beamline U14A**

PRT Affiliations: Brookhaven National Laboratory (NSLS), Rutgers University  
Beamline Status: Operating  
Primary Techniques: VUV/Soft X-ray Spec.  
Detailed Research/Techniques: Relatively low photon energy resolution, plane-grating-monochromator (PGM) which covers the VUV and part of the soft x-ray photon energy ranges. Techniques: VUV/soft x-ray photoemission.  
Energy Range: 15-300 eV  
Monochromator Type: PGM  
General user allocation: 50%  
Local contact: Steven Hulbert, 631-344-7570, hulbert1@bnl.gov  
Spokesperson: Steven Hulbert, 631-344-7570, hulbert1@bnl.gov  
Beamline Phone: 631-344-5514

**Beamline U14B**

PRT Affiliations: Brookhaven National Laboratory (NSLS),  
Beamline Status: Diagnostic  
Primary Techniques: Diagnostic  
Detailed Research/Techniques: VUV Ring beam position monitoring.  
Monochromator Type: W  
General user allocation: 0%  
Local contact: Steven Hulbert, 631-344-7570, hulbert1@bnl.gov  
Spokesperson: Steven Hulbert, 631-344-7570, hulbert1@bnl.gov  
Beamline Phone: 631-344-5514

**Beamline U16B**

PRT Affiliations: Brookhaven National Laboratory (NSLS), Rutgers University,  
University of Texas  
Beamline Status: Operating  
Primary Techniques: Soft X-ray Spectroscopy  
Detailed Research/Techniques: Performing APECS measurements on surface alloys, single crystal metallic surfaces & antiferromagnetic insulators; Dilute Pd/Ag(100) surface alloy; Ru(0001); Ag; MnO. Techniques: soft x-ray core level photoemission & photoabsorption spectroscopy, auger-photo.  
Energy Range: 50-1000 eV  
Monochromator Type: ERG  
General user allocation: 50%  
Local contact: Steven Hulbert, 631-344-7570, hulbert1@bnl.gov  
Spokesperson: Robert Bartynski, 732-445-4839, bart@physics.rutgers.edu  
Beamline Phone: 631-344-5516